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ABSTRACT

Prepared in response to a report by the Office of the Chancellor of the California Community Colleges on learning disabled students, this report describes students with learning disabilities, explains the operation of the community colleges' learning disability eligibility model, summarizes the main findings of the Office of the Chancellor's study, and discusses issues to be addressed in future studies. An explanation is provided of the seven-part assessment process developed by the community colleges to standardize procedures systemwide. The process involves: (1) intake screening; (2) identification of students' strengths and inconsistencies in achievement; (3) determination of students' level of personal independence and social and vocational responsibility; (4) measurement of ability level; (5) verification of deficits in information processing abilities; (6) assessment of the discrepancy between aptitude and achievement; and (7) the final eligibility recommendation. A final section questions the underrepresentation of older students and the overrepresentation of men among the learning disabled and differences in the representation of ethnic groups. Appended to the commentary is the Chancellor's Office report, "Demographic Characteristics Learning Disabilities Eligibility Model, 1987-1988." This report evaluates the impact of the eligibility model on the number, age, gender, and race of individuals identified as learning disabled who have received special services. (AYC)

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# COMMENTS ON THE COMMUNITY COLLEGES' STUDY OF STUDENTS WITH LEARNING DISABILITIES

*A Report to the Legislature in Response to Supplemental Report Language to the 1988 State Budget Act*

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# EXECUTIVE SUMMARY

Supplemental Report Language to the 1988 State Budget Act directed the Chancellor's Office of the California Community Colleges to report to the California Postsecondary Education Commission on the number, ethnicity, gender, and age of individuals who were referred for, eligible for, and received services as learning disabled students in California's community colleges during 1987-88. The language also directed the Commission to review and comment on that report and make recommendations to the Legislature by February 1, 1989.

The Chancellor's Office has prepared the required report, which is reproduced in Appendix B of this document, beginning on page 11. That report contains the data called for by the Legislature, except for demographic information about those students who received learning disabled services, which was not available.

The Commission's response describes students with learning disabilities, explains the operation of the community colleges' learning diability eligibility model, summarizes the main findings of the community colleges' study, and then discusses issues to be addressed in future studies in this area.

The Commission adopted this report at its meeting on January 23, 1989, on recommendation of its Policy Evaluation Committee. Additional copies of the report may be obtained from the Library of the Commission at (916) 322-8031. Questions about the substance of the report may be directed to Kevin Gerard Woolfork of the Commission staff at (916) 322-8025. Questions about the substance of the Chancellor's Office report in Appendix B may be directed to Karen Haliday of the Chancellor's Office staff at (916) 324-8487.

**COMMISSION REPORT 89-5**
**PUBLISHED JANUARY 1989**

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# Comments on the Community Colleges' Study of Students with Learning Disabilities

### Origins of the Commission's comments

Supplemental Report Language to the 1988 State Budget Act, which is reproduced in Appendix A on page 9 of this report, directed the California Community Colleges to provide instructional services to students with learning disabilities and also stated the Legislature's intent that the colleges continue the statewide implementation of their eligibility model for determining students' needs for learning disability services. But because of questions about the possibility of bias in that model, the Legislature directed the Chancellor's Office to report to the Postsecondary Education Commission and other agencies on the number, ethnicity, gender, and age of students who were (1) referred for learning disability services, (2) eligible for these services, and (3) received these services during the 1987-88 fiscal year. As a result, the Chancellor's Office has issued its report, *Demographic Characteristics, Learning Disabilities Eligibility Model, 1987-1988*, which is reproduced in Appendix B beginning on page 11 below.

The Supplemental Report also directed the California Postsecondary Education Commission to review and comment on that report and make recommendations to the Legislature by February 1, 1989. In the present document, the Commission responds to that legislative mandate.

According to the Supplemental Report, by January 1, 1992, the Chancellor's Office is to provide data to the Commission on services for community college learning disabled students for the 1988-89 through 1990-91 academic years. At that time, the Commission is to convene an advisory committee to assist in the evaluation of that information and then make a final report to the Legislature by March 1, 1992.

In this report, the Commission places learning disabilities in the context of disabilities in general, describes the development and seven components of the community colleges' learning disability eligibility model, and summarizes the main findings of the Chancellor's Office report by comparing the characteristics of all community college students with those referred and identified as learning disabled.

### Background about learning disabilities

California's colleges and universities serve students with a variety of disabilities, including mobility, visual, and other functional impairments, speech, hearing and other communication impairments, and developmental delay, as well as learning disabilities. Among the State's public colleges and universities, the community colleges serve by far the greatest number of these students with disabilities -- over 50,000 annually, according to a recent count, compared with approximately 6,000 at California's two public universities. The community colleges provide instruction to some categories of students, such as those with developmental disabilities, whom neither the University of California or the California State University serve.

During the 1987-88 academic year, the community colleges provided services to 11,323 learning disabled students, while the two public four-year segments provided services to a combined total of approximately 1,590.

#### *Definition of learning disability*

Title V of California's *Education Code*, which contains the regulations that govern the activities of the California Community Colleges, agrees with other State and federal legislative guidelines in defining a learning disability as

> a persistent condition of presumed neurological dysfunction which may also exist with other disabling conditions. This dysfunction continues despite instruction in standard classroom situations. Learning disabled adults, a heterogeneous group, have common attributes:

- Average to above average intellectual ability;
- Severe difficulties in processing information;
- Substantial aptitude-to-achievement discrepancies;
- Measured achievement in an instructional or employment setting; and
- Demonstrated level of personal independence and responsibility expected for his or her peer group.

The most commonly agreed-upon characteristic of students with learning disabilities is that they are not achieving at a level that one would expect.

*Differentiation of learning disabilities from other disabilities*

Learning disabilities are often confused with mental retardation or some other disabilities such as those listed above, but they are quite separate and specific from other disabilities. Learning disabilities are sometimes referred to as "hidden handicaps" because they become apparent only in very specific academic or work situations. Some students see or read words backwards or invert letters, while others have difficulty following a sequence of directions. If the learning disability is visual-spatial in nature, the affected student may have difficulty driving a car, copying material from a chalk board, or understanding the tables in a text book.

In the past, labels such as "dyslexia" were used to categorize specific learning disabilities. These terms are no longer used because although they were convenient, they were found to not accurately describe learning disabilities. Learning disabled students differ substantially from developmentally delayed learners (formerly known as "developmentally disabled"). Learning disabled students have average to above average intelligence and a record of demonstrated achievement and ability, while developmentally delayed learners have below-average intelligence and evidence only "potential" for future academic and employment success.

**Development of the community colleges' learning disabilities project and model**

The State Learning Disabilities Project of the California Community College's Chancellor's Office stemmed from a 1982 study by the Department of Finance, which concluded that the community colleges lacked consistent identification and assessment procedures for learning disabled students, resulting in inequities among the 70 districts. Until the districts could resolve these inequities, the Department froze the level of State funding for learning disabled services in the community colleges.

Supplemental Language to the 1982 Budget Act authorized a study to develop eligibility criteria for learning disabled programs in the community colleges. At that time, disagreement was substantial both at the State and national levels about the definition of a learning disability and how to distinguish this population from "underachievers" or "low-ability" students. To address these issues, the Chancellor's Office created a research consortium with representatives of the Institute for Research in Learning Disabilities at the University of Kansas and the Learning Disabilities Division of the California Association of Postsecondary Educators of the Disabled. Representatives of several other agencies and advocacy groups, including learning disabilities specialists, the Departments of Finance and Rehabilitation, and community college administrators, faculty members, clinicians, and psychologists assisted in the project.

This process helped to produce standards for the eligibility process, the definition of *learning disability* quoted above, and seven assessment components for identifying adults with learning disabilities. In Fall 1987, the 103 community colleges and three adult education centers that offer programs and services for learning disabled students implemented the resulting "Learning Disabilities Eligibility Model," entitled *California Assessment System for Adults with Learning Disabilities*. In May 1988, the State Assembly Ways and Means Subcommittee on Higher Education approved support for the continuation of the systemwide implementation of the eligibility model and called for an evaluation of its impact on the number, ethnicity, age, and gender of learning disabled students. It requested this evaluation to

assure that the implementation of the model would not lead to unexplained or detrimental over- or under-identification of any community college student as being learning disabled.

In its September report, the Chancellor's Office evaluated the impact of the model on the number, age, gender, and race of individuals referred and identified as learning disabled during the 1987-88 year -- but it was unable to include comparable information on the students who actually received learning disabled services. According to the Chancellor's Office, the data collected for these students were not coded in such a manner as to determine the demographic characteristics called for in the Supplemental Language.

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**The community colleges' process for determining learning disabilities**

The community colleges have developed the following seven-component assessment process to determine whether a student has a learning disability:

1. *Intake screening*

The purpose of intake screening is to gather pertinent background information on students referred for learning disabled services. Based on this background data, trained examiners administer either the Academic Attribute Survey, in order to analyze how the students' personal attributes relate to their learning problems, or the Academic Skills Assessment Battery -- a set of subtests that assess written expression, reading, and mathematic shortcomings that are ordinarily associated with learning disabilities.

2. *Measured achievement*

This component is designed to identify student strengths and inconsistencies in achievement, either in an instructional setting or in the employment setting. The purpose of determining measured achievement is to certify that the students have demonstrated an appropriate level of competency in an instructional or employment setting. The component is measured by comparing their performance in either of these two settings with that of a normative (average) group.

3. *Measured appropriate adaptive behavior*

This procedure provides information about whether the students have the level of personal independence as well as social and vocational responsibility expected of individuals in their peer group. Adaptive behavior can be measured using the Screening Measure of Adaptive Functioning or one of several other standardized measures. Unless the student shows evidence of the adaptive behaviors required to meet the minimal criterion for learning disabilities, some explanation other than a learning disability is presumed to be a better explanation of the students' achievement problems.

4. *Ability level*

Instruments used to measure students' ability level help to assess their likelihood of achieving in the community colleges. This information helps counselors design and implement appropriate instructional goals and activities for students. Again, a variety of evaluation instruments and methods are used in this component.

5. *Processing deficit*

Students with learning disabilities may lack the ability to acquire, manipulate, integrate, store, and retrieve information in the same manner as most students. The Processing Deficit Component is completed to verify that their difficulty is due to one or more of these factors, although the presence of this factor by itself is not sufficient to indicate that a learning disability exists. There are two primary and two secondary procedures, in addition to professional certification, that may be used to determine the existence and extent of a Processing Deficit.

6. *Aptitude-achievement discrepancy*

As mentioned earlier, the most common characteristic of students with learning disabilities is that they do not achieve at a level that one would expect. This difference from expected or predicted achievement to actual results is calculated and evaluated in the aptitude-achievement discrepancy component.

This is done by comparing students' predicted achievement in a given area, such as mathematics or reading, with their actual achievement score in the same area. If this discrepancy is greater than that of 92 percent of other students with the same aptitude score, the criterion for this component is met. Specific formulas are used for calculating predicted achievement scores, discrepancy scores, and criterion scores. A variety of aptitude and achievement measures are available for evaluating this component. As is the case with all of these components, evidence of aptitude-achievement discrepancy is not by itself sufficient for verifying that a learning disability exists.

7. *Eligibility recommendation*

This final component of the learning disabilities eligibility model relies on the judgment of the diagnosticians involved in the students' assessment. No additional assessment instruments or cutoff scores exist for making this determination. Four tasks are defined for the clinician in this component:

1. To collect and summarize the results of the previous six components;
2. To evaluate the results for their sufficiency, reliability, objectivity and validity;
3. To consider alternative explanations for the student's performance in addition to a learning disability; and
4. To conclude if an alternative explanation is most appropriate.

Not all students who complete the first six components are learning disabled, and the clinician must complete these four tasks in order to determine if a student is eligible for learning disabled services. Trained and licensed professional evaluators perform the learning disability assessments, and they are allowed to use their professional judgment to ensure that students who do not fit into the "mold" for learning disability eligibility determination are not disadvantaged by this process.

The flow chart in Display 1 below shows the progression from systemwide enrollment to students who actually receive services as being learning disabled.

## Data on students with learning disabilities

The 11,323 students who received learning disabled services in 1987-88 constituted slightly less than 1 percent of the community colleges' total enrollment of 1,264,409 students during Fall 1987. For its study, the Chancellor's Office received 8,492 student records for students who were assessed for learning disabilities using the learning disability eligibility model for the 1987-88 fiscal year. Of this total, complete data were available on 8,283 or 97.5 percent of these students. (Pages 2 and 3 of the Chancellor's Office report reproduced in Appendix B describe in detail the procedures it used in the survey.)

Display 2 on the following page summarizes the main findings of the survey and compares the percentage of students in both the referred and eligible groups with all community college students in terms of their age, gender, and ethnicity. (The information presented here is described in detail on pages 5-9 of the Chancellor's Office report. Appendix C of that report further elaborates on these demographic data.)

The following explanations apply to the categories of students covered in Display 2:

*Total Community College Enrollment:* The report uses Fall, 1987 total enrollment for the California Community Colleges. These enrollment figures in-

*DISPLAY 1 Process of Selecting Community College Students Who Receive Learning Disabled Services*

| All Community College Students | → | Students Referred for Assessment as Possibly Being Learning Disabled | → | Students Identified as Being Eligible to Receive Learning Disabled Services | → | Students Who Actually Receive Learning Disabled Services |
|---|---|---|---|---|---|---|

Source: California Postsecondary Education Commission.

*DISPLAY 2 Demographic Characteristics of Selected Community College Students, 1987*

| Characteristic | Total Community College Enrollment, Fall 1987 | | Students Referred for Learning Disability Assessment, 1987-88 | | Students Identified as Eligible to Receive Services, 1987-88 | |
|---|---|---|---|---|---|---|
| Age | Number | Percent | Number | Percent | Number | Percent |
| 16-17 | 31,610 | 2.5% | 184 | 2.2% | 119 | 2.24% |
| 18 | 98,624 | 7.8 | 816 | 9.9 | 520 | 9.79 |
| 19 | 103,682 | 8.2 | 941 | 11.4 | 611 | 11.51 |
| 20-24 | 308,515 | 24.4 | 2,123 | 25.7 | 1,363 | 25.67 |
| 25-29 | 19,598 | 15.5 | 1,286 | 15.6 | 821 | 15.46 |
| 30-49 | 384,380 | 30.4 | 2,622 | 31.7 | 1,676 | 31.56 |
| 50-Over | 141,614 | 11.2 | 295 | 3.6 | 200 | 3.77 |
| Total | 1,264,409 | 100.0% | 8,267 | 100.0% | 5,310 | 100.00% |
| Sex | | | | | | |
| Female | 716,920 | 56.7% | 4,346 | 52.5% | 2,684 | 50.50% |
| Male | 547,489 | 43.3 | 3,937 | 47.5 | 2,627 | 49.50 |
| Total | 1,264,409 | 100.0% | 8,283 | 100.0% | 5,311 | 100.00% |
| Ethnicity | | | | | | |
| American Indian | 15,173 | 1.2% | 109 | 1.3% | 65 | 1.29% |
| Asian | 122,648 | 9.7 | 175 | 2.1 | 90 | 1.79 |
| Black | 89,773 | 7.1 | 751 | 9.1 | 417 | 8.28 |
| Filipino | 31,610 | 2.5 | 52 | 0.6 | 25 | 0.50 |
| Hispanic | 189,661 | 15.0 | 1,205 | 14.5 | 718 | 14.25 |
| White | 788, 991 | 62.0 | 5,502 | 66.4 | 3,722 | 73.89 |
| Other | 26,553 | 2.1 | 105 | 1.3 | -- | -- |
| Missing | 63,610 | 0.6 | 384 | 4.6 | -- | -- |
| Total | 1,264,409 | 100.0% | 8,283 | 100.0% | 5,037 | 100.00% |

Note: The total number of community college students receiving learning disabled services in 1987-88 was 11,323. These students are not represented in this display and are mentioned only briefly in the community college's report because detailed information on them was not available in the three categories of age, sex, and ethnicity called for in the Supplemental Language directing this study. The column totals presented here for the age, sex, and race sample groups of community college students referred for learning disability assessment and eligible for learning disabled services are not the same, since data in each of these groups of students is not complete. For example, some students reported their sex and ethnicity but not their age.

Source: Adapted from the report of the Chancellor's Office, California Community Colleges, reproduced in Appendix B below.

cluded 1,264,409 students who were full time, part time, attended either day time or evening in either credit or non-credit classes.

*Students Referred for Learning Disabled Assessment:* Referred students were those students who initiated the identification procedures used in the learning disability eligibility model. The 103 colleges reported information on 8,492 students who in the 1987-88 academic year were referred for assessment. As explained above, complete data were available on 8,283 of these students.

This group is the most significant of any for the purposes of comparison, because it contains the maximum number of students who can become officially eligible to receive learning disabled services. If the

numbers of referrals are low for any specific category of students, the numbers of students in any of the *eligible* categories will also be lower for that group -- even if a greater percentage of those students are determined to be eligible for learning disabled services.

*Students Identified as Eligible for Learning Disabled Services:* Identified students included those students who were administered and qualified on each of the seven components of the eligibility model. These "identified" community college students are eligible to receive learning disabled services. If a student failed to meet the criterion of any one of the seven eligibility components, he or she was ineligible to receive state-reimbursed learning disabled services.

(Display 2 does not include data on the 11,323 students actually served during 1987-88, including those who received help from Disabled Student Programs and Services other than through the assessment procedures used in the learning disability eligibility model. The Chancellor's Office will be able to include these data by number, age, sex, and race, for its next report, but they were unavailable for this year. The total number of students receiving state-supported services for learning disabilities as their primary disability during 1987-88 was 9,570. A total of 11,323 community college students received these services when a learning disabled was either the primary or secondary disability. These numbers include students who were identified *prior* to the full implementation of the new eligibility model in October 1987.)

In terms of the age of students, Display 2 shows that each of the seven age classification groups in this display appears to be proportionately represented in the learning disabled referral sample with the exception of persons over 50 years of age. They comprise more than 11 percent of the community college student population but represent only 3.6 percent of all the students referred for learning disabled services.

In terms of students' sex, Display 2 shows that 52.5 percent of referred students were women and 47.5 percent were men, compared to 50.5 and 49.5 percent, respectively, of identified students and to 56.7 and 43.3 percent of all community college students.

In terms of ethnicity, Display 2 shows that while the percentage representations for most of the seven ethnic categories used by the Chancellor's Office are similar for both the total enrollment and the two sample groups, Asian students are substantially underrepresented in the referred group -- representing only 2.1 percent, compared to 9.7 percent of community college students as a whole. Filipino students are also underrepresented in the referred group -- constituting 0.6 percent, compared with 2.5 percent of all community college students. (Ethnic data were unavailable on 384 students, and another 105 students were categorized as "other" than American Indian, Asian, Black, Filipino, Hispanic, or white.)

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## Conclusions and questions for further discussion

In general, the percentage representations of learning disabled community college students, as referenced in the Supplemental Language (age, gender and ethnicity) are in line with their representations in the community college student population systemwide. The percentage differences described in the community college report do not show patterns of bias, but some of the data raise four questions that deserve investigation and answers in future reports.

### *Why are older students underrepresented among the learning disabled?*

As noted above, the community college's data show that students over the age of 50 are underrepresented as being referred for -- and eligible for -- learning disabled services. The reasons for this underrepresentation could be many:

- Due to funding and other restraints, services for learning disabled students in community colleges are generally not as available to students who attend class in the evening as for those who attend during the day -- and students in this age category take a disproportionate number of classes in the evenings.
- Further, community college officials note that many people in the "50 and over" age category take courses for social purposes and are not pursuing academic, or continuing education goals. This would lead to their not accessing learning disabled -- and other -- student services at the

same rate as would students with more traditional goals.

- In addition, by the time people have reached the age of 50, they may have found effective ways to compensate for learning disabilities in day-to-day life and might not see the need to apply for learning disabled services at a college.

At any rate, a further investigation of this statistical underrepresentation of students over the age of 50 seems warranted for next year's report.

*Why do men appear to be overrepresented among the learning disabled?*

The differences in learning disability referrals for both male and female students vary from their representations in the community college student body by more than four percentage points. Male students comprise 52.5 percent of the referral group which is 4.2 percent greater than their representation in the systemwide student body, while female students are underrepresented in the referral group by this 4.2 percent. The community colleges' report notes that this pattern of representation is also quite different from what occurs in the K-12 education sector. Officials in the Chancellor's Office will look into this issue more closely for next year's report.

*What accounts for the differences in representation by ethnic group?*

The broad questions of differential participation rates in student services among ethnic groups have concerned academic researchers for decades. Research and analysis nationwide has acknowledged that, with regard to ethnicity, students' decisions about which campus-level services and programs to access pertain to cultural, social, personal and economic factors that are difficult to account for in an empirical study. Such decisions made by students are based upon often times arbitrary and subjective processes that, as a practical matter, cannot be measured precisely. In sum, the ethnicity data presented in the community college report is thorough, yet difficult to use in drawing conclusions.

As Display 2 above shows, with the exception of Asian and Filipino students, the percentages of students, by ethnicity, who are determined to be eligible for learning disabled services in the sample group rather closely mirror their percentage representations in the population of community college students at large. Black students, for example, comprise just over 7 percent of the total community college student body and make up 8.3 percent of the students in the *eligible* sample group and the percentages for Hispanic students are 15 percent of all community college systemwide enrollment and 14.3 percent of all *eligible* learning disabled students.

One question raised by the set of ethnicity data presented here relates to the significant underrepresentation of Asian and Filipino students in the learning disabled referred group as compared with systemwide enrollment. As Table 5 on page 8 of the community college report and Display 3 on page 8 of this report show, these two groups of students are underrepresented by at least a factor of four when their rate of referral for learning disabled services is compared with their representation in the community colleges' student systemwide population. For next year's community college report, a more thorough analysis of the various ethnicities that comprise the "Asian" category might provide better information on their behavior patterns as they relate to referral and eligibility for learning disability services in the community colleges.

Another difference involving student ethnicity is the percentage of students initially referred for learning disabled services for whom eligibility is determined. This information is shown in Display 3 of this report and is expanded upon in Table 5 and, more specifically, Table 18 on page 31 of the community colleges' report. While the average percentage of referred learning disabled students identified as being eligible is 70.9 percent, Asian and Filipino students are determined eligible at the lower rates of 57.7 and 52.1 percent, respectively. It is possible that language differences account for some of this underrepresentation and underreferral of Asian students. The English-speaking abilities of some of these students is limited, and this fact may discourage potential applicants from initiating the determination process. The Commission therefore suggests that the Chancellor's Office investigate the effect that such language barriers may have on the representation of Asian students in learning disabled student services programs.

All ethnic groups other than whites had lower percentages of determination of eligibility than the 71 percent average, but the rates for Asian and Filipino

*DISPLAY 3* *Total Number and Percentages of Community College Students Classified by Ethnicity Who Were Determined to Be Eligible for Learning Disabled Services, as Derived from the Number Referred for Assessment for Learning Disabilities*

| Classification | American Indian | Asian | Black | Filipino | Hispanic | White | Total |
|---|---|---|---|---|---|---|---|
| Students Referred | 109 | 175 | 750 | 52 | 1,204 | 5,501 | 7,791 |
| Not Administered | -18 | -19 | -82 | -4 | -126 | -437 | -686 |
| Net Referrals | 91 | 156 | 668 | 48 | 1,078 | 5,064 | 7,105 |
| Number Eligible | 65 | 90 | 417 | 25 | 718 | 3,722 | 5,037 |
| Percent Eligible | 71.4% | 57.7% | 62.3% | 52.1% | 66.5% | 73.5% | 70.9% |

Note: Not included in this display are the categories "Other" and "Missing," thereby making total numbers differ slightly from those presented in Tables 5 and 18 of the community college report. "Not Administered" means students who were referred for learning disability assessment but who did receive administration of the seventh component of that assessment -- the eligibility recommendation.

Source: California Community Colleges' Chancellor's Office.

students are almost 5 percentage points lower than the next lowest rate presented in this display. (The percentage of learning disabled eligibility for each ethnic category is derived by first subtracting the 686 *referred* students who did not complete the eligibility determination process from the total *referred* sample and then dividing the number of students determined eligible in each category by the new "net" referred number.)

*How do the characteristics of students with learning disabilities compare to other groups of students?*

One final observation pertains to the comparisons established and used in the Chancellor's Office report. That report compares the two learning disabled student sample groups with the community colleges' total student population.

The Commission suggests that, in addition to this systemwide enrollment, the Chancellor's Office consider using other comparison groups, such as full-time students, in next year's study.

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# Appendix A

## *Item 6070-101-001, Supplemental Report Language to the 1988 State Budget Act*

It is the intent of the Legislature that community colleges provide support and instructional services to students with learning disabilities. It is further the intent of the Legislature that community colleges continue the eligibility model implemented statewide in 1987-88 in a manner which affirms the state's commitment to educational equity and ensures accuracy and fairness in determining student eligibility for the program. In keeping with these goals, the Chancellor's Office shall do all of the following:

*Data Collection.* Prior to September 30, 1988, the Chancellor's Office shall report to the California Postsecondary Education Commission (CPEC), the Legislative Analyst's Office, and the Department of Finance on the number, ethnicity, gender, disability, and age of individuals referred, identified, and receiving services as learning disabled (LD) students during the 1987-88 fiscal year. By February 1, 1989, CPEC shall review, comment, and make recommendations to the legislative budget and policy committees based on these data.

*Evaluation.* CPEC shall evaluate and report on the impact of the LD model on LD student eligibility based on data collected between the 1987-88 through 1990-91 academic years. Prior to January 1, 1992, the Chancellor's Office shall provide data to CPEC on the number, ethnicity, gender, disability, and age of individuals who were referred, identified, and/or received services as LD students in each academic year. CPEC shall review and comment to the legislative budget and policy committees on this report by March 1, 1992.

It is the intent of the Legislature that in the development of its review, CPEC shall convene an advisory committee composed of professionals with expertise in (1) psychometric testing and evaluation with respect to learning disabled adults, (2) the impact of psychometric assessment instruments on minority group students.

# Appendix B

## Demographic Characteristics Learning Disabilities Eligibility Model 1987-1988

California
Community
Colleges
Chancellor's Office

September 30, 1988

## INTRODUCTION

In 1982 the Chancellor's Office of the California Community Colleges formed a consortium with the California Association of Post-Secondary Educators of the Disabled (CAPED) and the University of Kansas' Institute for Research in Learning Disabilities to improve and standardize assessment procedures that would identify students with learning disabilities. The tasks included the development of the eligibility components, procedures, and criteria to be used in programs for students with learning disabilities (LD) in community colleges throughout the state.

Representatives from numerous agencies and groups assisted with the project: LD specialists, LD advocacy groups, college administrators, Department of Finance, the Office of the Legislative Analyst, the State Department of Rehabilitation, speech and language clinicians, psychologists, and community college faculty.

This collaborative effort produced standards for the eligibility process, a learning disabilities definition, and seven assessment components for identifying adults with learning disabilities. This model provided an operational definition of the LD construct and attempted to reduce or eliminate the inequities, inconsistencies, and biases that have characterized previous models. In the fall of 1987 the new LD eligibility model, entitled California Assessment System for Adults with Learning Disabilities, was fully implemented at the 103 California community colleges and three adult education centers which offer LD programs and services. Implementation has incorporated (a) in-service programs for all credentialed LD specialists; (b) review and follow-up training; (c) establishment of a regional communications network through organizing a Field Advisory group of LD specialists ; (d) implementation of campus visitations for providing requested technical assistance; (e) Chancellor's Office bulletins providing policy direction and answers to technical questions; (f) monitoring procedures of the model's outcomes in the age, gender, and racial characteristics of students in the LD programs; and (g) studies to measure the validity of program outcomes.

On May 18, 1988 the Ways and Means Subcommittee on Higher Education approved support for continuation of the system-wide implementation of the Learning Disabilities Eligibility Model. The committee also directed the California Postsecondary Education Commission (CPEC) to evaluate and report on the impact of the LD model on LD student eligibility based on data collected over a four year period from 1987-88 through 1990-91. (See Appendix A).

This report evaluates the impact of the California Community Colleges' Learning Disabilities' Eligibility Model on the number, age, gender, and race of individuals referred and identified as learning disabled during the 1987-88 fiscal year.

## METHODS

The California Community Colleges fully implemented a system-wide Learning Disabilities Model in 1987. The model provides eligibility components, procedures, and criteria used for identifying students with learning disabilities. The impact of the model on students referred, assessed, and identified using the eligibility process during the 1987-1988 is evaluated in terms of their number, ethnicity, gender, disability, and age.

### Population parameters

California has 106 community colleges. One hundred three community colleges and three adult education centers have credentialed and certified learning disabilities specialists who provide assessment and services to students with learning disabilities. These colleges and centers were asked to submit data on each student who went through the assessment process between July 1, 1987 and June 30, 1988. Data was requested on those students who completed the process and were eligible for services, students who were found ineligible, and students who started but did not complete the assessment process.

A total of 8492 student records was received and of these, 8283 were entered, representing 97.5 percent of students who were assessed for learning disabilities using the LD Eligibility Model from July 1, 1987 through June 30, 1988.

### Materials

On May 25, 1988 a letter was sent to all supervising administrators of Disabled Student Programs and Services requesting that information on the students assessed for learning disabilities using the eligibility model be sent to the Chancellor's Office by July 15, 1988. Attached to this letter were the Ways and Means Subcommittee's alternative language, the LD Eligibility Model Data Form, and directions for completing the data collection form (see Appendix B).

The data collection form provided space for the student's identification number, sex, age, and race (American Indian or Alaskan Native; Asian or Pacific Islander; Filipino; Black, Negro, or Afro-American; Chicano, Hispanic, Mexican-American, or Spanish-Speaking: White or Caucasian; Other; Unknown, Missing. ) In addition, outcome information regarding each of the seven eligibility components (Intake Screening, Measured Achievement, Adaptive Behavior, Ability Level, Processing Deficit, Aptitude-Achievement, and Eligibility Recommendation) was required. The outcome of assessing each student on each of these seven components was coded as: Y - yes, the component was met; PC- professional certification was used to meet the component; N-no, the component was not met; and NA- the component was not administered. The last column on the data form permitted recording of whether or not additional services beyond assessment were provided for the learning disabled.

### Procedures

The surveys were mailed May 25, 1988. Chancellor's Office personnel were available to assist with questions or concerns regarding the completion of the data forms. As forms were returned, a staff member assigned a number code for each college and made a duplicate copy of the completed form. The original copy was filed in a binder, and the data

logged. The copy was given to the data entry personnel. Follow-up calls were made to colleges that had not responded by July 15th, as well as to colleges that returned forms that were incomplete or incorrect (such as two racial groups listed for a student or "yes" and "no" indicated for the same component). Due to the lateness of the request for information and summer vacations, the deadline was extended to August 10, 1988. All colleges submitted the required information by this date with the exception of one college which submitted the data report on August 25th.

Data entry

The following data was entered into the computer file for each student reported on the college's data form: the assigned college three digit code, student identification number, gender, age, race, component codes, and added services. If the the student identification number or gender code was incomplete, the college was contacted and requested to supply the missing information. If this missing information was unattainable, the student case was not entered.

Other cases received but not entered were students whose ages were below 16 years, students with other primary disabilities, students who had been assessed prior to July 1, 1987, and students who were not scheduled to complete the assessment procedures until after June 30, 1988. For each college, the total number of cases received and the total number of cases entered was recorded accompanied by a statement explaining the deleted cases.

Data verification

To assure that the student information collected in the survey had been accurately entered in the computer file, every tenth record was checked for correct college code, student identification number, gender, age, components, and added services. In the event that either omissions or data entry errors occurred, the necessary corrections were made.

## RESULTS

### Overview

The results of this study have been organized to describe the number of students referred, identified, and receiving services in the colleges' learning disabilities' programs. Information about these students' age, gender, and race are presented. The results are presented in two versions. The first version reported in this section is condensed. In Appendix C an elaborated treatment is included. The expanded version includes additional data, statistics, and text. Some of the text provided in the shorter version is copied in the elaborated version to provide continuity. In both discussions the results are organized such that within each of the categorical descriptors of age, gender, and race, data concerning referred and identified students are presented.

Two methods might be used in evaluating data: qualitative and quantitative. A qualitative analysis may involve visually comparing different percentage values and judging the similarity of the values. A quantitative analysis may involve statistical calculations which evaluate the extent to which the actual observed percentages are similar to the percentages expected from a probability model. A second statistic may estimate the degree of relationship between a pair of variables such as age and eligibility outcome. In these results, three statistics were calculated: a) chi-square, $X^2$, b) Cramers' correlation coefficient, and c) effect size, $\omega$. However, in the final analysis even the quantitative analysis includes qualitative features such as deciding the appropriate model, statistic, and criteria. Opinions could easily differ on such decisions.

Given the large sample sizes in both the referral and identified samples, these results are likely a very accurate reflection of outcomes system-wide, though individual colleges may show fluctuations. Also the results are likely very stable. In this case stability refers to the consistency which one would find in these results if the student samples were collected a second time from the same data sets, which in this case would be the colleges' student files.

Referred students. Referred students were those students who initiated the identification procedures used in the learning disabilities eligibility model. The 103 colleges reported information on 8492 students who in the 1987-88 academic year were referred for assessment. However, as explained in the Procedures section, complete data were available on 8283 students. This sample of 8283 or 97.5% of the total students was used in these analyses.

System-wide demographics. Comparisons are made between the referral sample and the fall enrollment figures for 1987. These enrollment figures included 1,264,409 students who were full-time or part-time, attended either day time or evening in either credit or non-credit classes.

Identified students. Identified students included those students who were administered and qualified on each of the seven components of the eligibility model. If a student failed to meet the criterion on any one of the seven eligibility components, s/he was ineligible.

Served students. Served students included those students who received DSPS services other than the assessment procedures used to identify LD students. While the total number of served students is available in the Chancellor's Office, the data were not coded in such a manner to determine age, gender, and racial characteristics. Thus, the

information was also sought in this data collection effort. However, the problem was that the question was ambiguous to the respondents. The question did not adequately distinguish eligibility assessment, which is a service, from other services. This problem will be corrected in future data collection efforts. The total number of students receiving state supported LD services during 1987-88 was 9570 as primary LD and 11,323 as either primary or secondary LD. These numbers include students who were identified prior to the full implementation of the new eligibility model in October, 1987.

Age factor

Referral sample. Of the 8283 students in the referral sample, 8267 (99.8%) reported age information. These 8267 were grouped into the seven age-categories used in the Chancellor's Office and are reported in Table 1. This referral sample did not include students under the age of 16. The percentage values and numbers for the system-wide college enrollment in fall, 1987 appear in the bottom half of Table 1. Age is unknown for 9,023 students (<.1%) system-wide. The greatest discrepancy between the percentages of the college enrollment and the referral groups occurs in the "50 or over" age grouping.

Table 1
Referral Sample and College Enrollment Age Groupings

| Age Group | N % | 16 or 17 | 18 | 19 | 20 - 24 | 25 - 29 | 30 - 49 | 50 or over | Total |
|---|---|---|---|---|---|---|---|---|---|
| Referral Sample | N | 184 | 816 | 941 | 2123 | 1286 | 2622 | 295 | 8267 |
| | % | 2.2 | 9.9 | 11.4 | 25.7 | 15.6 | 31.7 | 3.6 | 100 |
| Total College | N | 31610 | 98624 | 103682 | 308515 | 19598 | 384380 | 141614 | 1264409 |
| | % | 2.5 | 7.8 | 8.2 | 24.4 | 15.5 | 30.4 | 11.2 | 100 |

Identified sample. Age and identification information was available on 8267 students. Of these students, 768 were not administered the Eligibility Component, which is the last component in the identification procedures. Table 2 includes a cross-classification of age groupings and the outcome on the Eligibility Component. The table includes the seven age groupings and the corresponding percentages of those eligible using the identification procedures.

Table 2
Cross-classification of Eligibility Outcome by Age

| | Age Levels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Row Percent / Column Percent | 16 or 17 | 18 | 19 | 20-24 | 25-29 | 40-49 | 50 or over | Row Total |
| Eligible | 2.24 | 9.79 | 11.51 | 25.67 | 15.46 | 31.56 | 3.77 | 5310 |
| | 75.32 | 71.53 | 72.22 | 71.62 | 69.52 | 69.31 | 75.19 | 70.81 |
| Column Total | 158 | 727 | 846 | 1903 | 1181 | 2418 | 266 | 7499 |
| | 2.11 | 9.69 | 11.28 | 25.38 | 15.75 | 32.24 | 3.55 | 100.00 |

Analysis. A review of the tabled values suggests that the percentages of those eligible in each age grouping is similar to the percentages of each group in the total sample. For example, of the total number of eligible students indicated in the top row of Table 2, 2.24% were in the "16 or 17" age grouping. Of the total sample, 2.11% were in the "16 or 17" age grouping. A statistical test indicated that the proportions were not beyond expected values. A second statistic indicated that one's age had little relationship with the eligibility outcome.

Age related issues. The age pattern of referred students showed a similar pattern to the general college enrollment data. This pattern may not have been expected. Since the majority of LD programs are day programs and do not operate in the evening, a sizable portion of the college population does not have opportunities to participate, and thus was not reflected in the referred sample. The age grouping that did show significant difference in proportional representation is the "50 or over" grouping. It was smaller than the general population's proportion in this age grouping. Several factors may account for this disproportion such as: enrollment patterns, day or evening classes, counseling, and personal interests.

Gender factor

Referral sample. Gender information was available on all 8283 students in the referral sample. Of those 4346 or 52.5% were females and 3937 or 47.5% were males.

A contrast of proportions was made by comparing the referral sample percentages with those percentages of the 1987 system-wide enrollment. In the fall, 1987, females numbered 716,920 or 56.7% of the students, and males numbered 547,489 or 43.3%. Less than .2% of the students did not indicate gender.

Identified sample. Gender and identification information was available on 8283 students. Of these students, 782 were not administered the Eligibility Component. Table 3 includes a cross-classification of gender groups and their outcome on the Eligibility Component.

Table 3
Cross-classification of Eligibility Outcome by Gender

| Row Percent<br>Column Percent | Female | Male | Row Total |
|---|---|---|---|
| Eligible | 50.55<br>67.60 | 49.45<br>74.44 | 5312<br>70.82 |
| Column Total | 3972<br>52.95 | 3529<br>47.05 | 7501<br>100.00 |

Analysis. The proportions of the referral sample differ somewhat from the general college population. The referral sample of females was 4% less than their proportion in the college. Similarly, the proportion of males was greater in the referral sample by 4%. In the identification sample, a statistical test indicated that these differences were statistically significant, i.e., the difference between expected and observed proportions is greater than would occur by chance.

A follow-up question is: What is the degree of association between the students' gender and outcome? This question is answered with a correlation coefficient, which in this case is .07 and is a low correlation. If one asks to what extent does gender influence the outcome on the Eligibility Component, the calculated value is .075. This value is commonly considered a small effect.

The ratio of females to males identified as learning disabled is quite different from the general pattern in other data sets. In previous analyses, largely from K - 12 grade levels, the ratio of males to females ranges from 3:2 to as high as 7:3. The differences in the community colleges is a shift in numerical values based on the other data sets.

Racial factor

Referral sample. Of the 8283 students in the referral sample, 7899 students indicated their racial group membership; information was missing on 384 cases. A frequency count for each racial grouping in the referral sample and the system-wide college enrollment appears in Table 4.

Table 4
Frequency Values for Race

| | Referral Sample | | 1987 Colleges | |
|---|---|---|---|---|
| Race | Count | Pct | Count | Pct |
| Am Indian | 109 | 1.3 | 15173 | 1.2 |
| Asian | 175 | 2.1 | 122648 | 9.7 |
| Black | 751 | 9.1 | 89773 | 7.1 |
| Filipino | 52 | .6 | 31610 | 2.5 |
| Hispanic | 1205 | 14.5 | 189661 | 15.0 |
| White | 5502 | 66.4 | 788991 | 62.0 |
| Other | 105 | 1.3 | 26553 | 2.1 |
| Missing | 384 | 4.6 | 63610 | .6 |
| Total | 8283 | | 1264409 | |

Identified sample. Race and eligibility outcome information was available on 7794 students. Of this group, 686 students were not administered the Eligibility Component. In analyzing these data, students who had indicated "Other" were eliminated. The rationale was that this group lacked sufficient specificity for knowing how to interpret the data.

Table 5 includes the eligibility outcome for the six racial groupings. Row and column percentages are presented in the table. In addition frequency counts are included in the corresponding row and column totals.

Table 5
Cross-classification of Eligibility Outcome by Race

| Row Pct<br>Column Pct | American Indian | Asian | Black | Filipino | Hispanic | White | Row Total |
|---|---|---|---|---|---|---|---|
| Eligible | 1.29<br>71.43 | 1.79<br>57.69 | 8.28<br>62.33 | .50<br>52.08 | 14.25<br>66.54 | 73.90<br>73.50 | 5038<br>70.88 |
| Column Total | 91<br>1.28 | 156<br>2.19 | 669<br>9.41 | 48<br>.68 | 1079<br>15.18 | 5065<br>71.26 | 7108<br>100.00 |

Analysis. A review of Table 4 indicates a marked difference in the representation of the Asians and Filipinos in the referral sample versus their representation in the general community college population. One might speculate on a number of reasons for such a difference, e.g., overall achievement level, enrollment patterns, college goals, attributions of successful and unsuccessful achievement, scheduling patterns, motivation, counseling and advisement. These explanations and others were not addressed in the data collection efforts.

In Table 5, differences are also observed between the proportions of the racial groups in the sample and their eligibility outcome. These differences are reflected in the row percentages. The greatest difference was between the percentage of Whites in the sample, 71.26%, and their percentage of the identified students, 73.9%. This difference was 2.64%. Of minority groups, Blacks were under-represented in the eligible group by 1.13% (9.41 - 8.28 = 1.13) in comparison to their percentage in the referral sample.

The column percentages also show variations. While 52% of all Filipinos were eligible, 73.5% of all Whites were eligible. These two groups represent the greatest extremes. Interestingly, the Asians had the second lowest eligibility rate, 57.69%. These differences might be explained by language differences. That is, the colleges may be using the LD programs as a means of obtaining a more comprehensive assessment of the language and academic related characteristics of Asian and Filipino students. Thus, the referral may not be based on the likelihood of a learning disability, but rather on the need for additional academic and ESL programing information. On the other hand, these groups had lower proportions in the referral sample than their proportion in the general population. Clarification of these data await additional research.

Statistics were calculated on the expected and observed proportions in Table 5. This statistic was significant and indicated that the observed proportions did differ from expected values. A correlational statistic assessed the relationship between racial grouping and eligibility outcome. The calculated value was .10, which is a low correlation. If one asks to what extent does race influence the outcome on the Eligibility Component, the calculated value was 10%. Of the three factors considered, age, gender, and race, this last factor, race, had the greatest association and impact on the eligibility outcome. However, even with race included, the other 90% of factors are not identified. These other factors might include socio-economic level, language facility, at-risk health history, motivation, parental expectations, level of aspiration, interactions between age

and gender, the referral process, and the age, gender, and race of administrative and instructional staff.

## DISCUSSION

In the discussion section, the basic results of the study are reviewed and a set of issues relevant to the data are presented. This report describes characteristics, i.e., age, gender, and race, in three student groupings of the college population: (a) the students enrolled in the fall, 1987; (b) the students referred for evaluation on the LD eligibility model; and (c) the students found eligible on the LD eligibility model, i.e., identified as learning disabled. Comparisons of those characteristics were made among the general student population with the students referred and identified as learning disabled.

In general the age characteristics of the identified LD sample matched closely the age characteristics of the college student population and the referral sample. However, students age 50 or over were not referred to LD programs in the same proportion that they were enrolled in the college.

For the gender factor, the observed proportions differed from expected values in a statistically significant manner. Males were more likely to be eligible than were females.

On racial factors, significant differences were found in examining the proportions of Asians and Filipinos in the student population and their proportions in the referral sample. They were under referred in proportion that they were included in the student population. Among the identified LD populations, proportional differences were also noted. The proportions of students eligible in each racial group were not equivalent.

While gender and racial factors have a statistically significant relationship with the eligibility outcome, these characteristics do not significantly effect the eligibility decision. Other factors were suggested as having a cumulatively greater effect. These factors may include: socio-economic level, language fluency, educational history, referral process, support services, availability of services, scheduling of services, campus population characteristics, administrative support, level of aspiration, and motivation. However, one should also be cognizant that gender and race may explain the relationship to a greater degree than any other factor. Presently which factors are important is unknown.

Issues. The Chancellor's Office values equitable, accurate, unbiased, and consistent assessment of students. As one attempts to judge the extent to which these standards are met, the realization is quickly apparent that the terms have different meanings to different people. Thus, to evaluate these standards, conceptual and operational definitions and evaluation criteria must be agreed upon (Hunter & Schmidt, 1976).

An assumption seems to be that a parity model is appropriate in evaluating the eligibility model. That is, the model is equitable to the extent which students are included in proportion to the extent their group occurs in the population. The question is: What is the basis for using parity as the criterion? Are other criteria important?

A second assumption seems to be that students as members of a particular age, gender, or racial grouping are all alike because of their membership in that particular grouping. Such an assumption is unfounded and in fact contrary to the concept of individual differences.

As indicated in the report, the factors of age, gender, and race account for little impact on the eligibility outcome. Thus, an important next step is the determination if other factors than those assessed in the eligibility model contribute to the eligibility outcome. Revisions have been made to the Intake Interview and questions have been included in a set of supplemental questions to examine the contribution of other factors, e.g., extent of parents' education, race of primary care giver, personal and parental expectations for education, friends' educational experience, and parental employment. Students will be asked to respond to the supplemental questions following the evaluation sessions so that answers are not part of the eligibility information.

Statistical indices are frequently accepted as a measure of fairness, however, they too have a narrow interpretation. Unfairness, even if it occurs for a particular student in one setting is still injustice. The case can also be made that the numbers may look "right," but yet not be sensitive to particular factors affecting fairness, accuracy, and equity.

In interpreting these data a seemingly important consideration is that students' participation is strictly voluntary. Each student must sign a consent form indicating that s/he agrees to the assessment. However, enrollment in other college programs and classes is not contingent upon the results of the learning disabilities assessment. Understanding these basic points is essential when considering the colleges' LD programs.

An issue in these data is that "referred students" were operationally defined as those students for whom the colleges' LD specialists had completed an Intake Interview. The number of students who sought out the LD program or were recommended by someone else, e.g., counselor, class instructor, etc., but did not choose to complete the initial interview process is unknown. Thus, the sample used in this report must be considered as a conservative estimate.

A related issue of the referral process is that the referral process is not uniform across campuses, just as student demographics are not uniform across the campuses. The availability of services are clearly impacted by the constraints which limit their access to particular students, e.g., those students who are registered and enrolled or those students who attend during the day. Additional factors hypothetically impacting the referral process concern recruitment and how the LD program is perceived on campus and in the community. Recruitment issues include who does the recruitment and where it is done.

As an additional effort to improve the accuracy and consistency of students' evaluations, LD specialists will have a computer program to assist them in converting students' raw scores to standard scores and other scales. With the cooperation of testing companies, the Chancellor's Office developed the computer program so that each specialist can easily obtain accurate scores for use in the eligibility procedures and reporting similar information as part of the legislature's research interests in the eligibility model.

Summary. In this Discussion section the results were briefly reviewed, and a variety of issues were presented concerning factors impacting the results. Quite obviously, the issues, like the results, are not simple. Simplistic approaches are not likely to assist in providing equitable, accurate, and consistent services to students. Similarly, these standards are not met by satisfying a particular statistical test. The issues are not

statistical, but rather issues of social values, the most basic of which is justice (Cronbach, 1976; Hunter & Schmidt, 1976; Peterson & Novick,1976; Rawls, 1971).

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# Appendix A

## Budget Language Directing Data Collection

Item 6870-101-001
Learning Disabilities
Screening Model

Ways and Means Staff
May 12, 1988

ALTERNATIVE LANGUAGE

It is the intent of the Legislature that community colleges provide support and instructional services to students with learning disabilities. It is further the intent of the Legislature that community colleges continue the eligibility model implemented statewide in 1987-88 in a manner which affirms the state's commitment to educational equity and ensures accuracy and fairness in determining student eligibility for the program. In keeping with these goals, the Chancellor's Office shall do all of the following:

Data Collection. Prior to September 30, 1988, the Chancellor's Office shall report to the California Postsecondary Education Commission (CPEC), the Legislative Analyst's Office, and the Department of Finance on the number, ethnicity, gender, disability, and age of individuals referred, identified, and receiving services as learning disabled (LD) students during the 1987-88 fiscal year. By February 1, 1989, CPEC shall review, comment, and make recommendations to the legislative budget and policy committees based on these data.

Evaluation. CPEC shall evaluate and report on the impact of the LD model on LD student eligibility based on data collected between the 1987-88 through 1990-91 academic years. Prior to January 1, 1992, the Chancellor's Office shall provide data to CPEC on the number, ethnicity, gender, disability, and age of individuals who were referred, identified, and/or received services as LD students in each academic year. CPEC shall review and comment to the legislative budget and policy committees on this report by March 1, 1992.

It is the intent of the Legislature that in the development of its review, CPEC shall convene an advisory committee composed of professionals with expertise in (1) psychometric testing and evaluation with respect to learning disabled adults, (2) the impact of psychometric assessment instruments on minority group students.

# Appendix B

## Data Collection Forms

CHANCELLOR'S OFFICE

GEORGE DEUKMEJIAN, *Governor*

CALIFORNIA COMMUNITY COLLEGES
1107 NINTH STREET
SACRAMENTO, CALIFORNIA 95814
(916) 445-8752

May 25, 1988

TO: DSP&S Supervising Administrators

FROM: Susan Cota, Coordinator for the Administration of DSP&S

SUBJECT: LD Data Collection

On May 18, 1988 the Ways and Means Subcommittee on Higher Education approved support for continuation of the statewide implementation of the Learning Disabilities Eligibility Model. The Disabled Students Programs and Services of the Special Services Unit is pleased that Legislative support for the use of this process has been determined.

We are enclosing a copy of the Alternative Language statement that was approved by the Subcommittee which instructs the Chancellor's Office to accomplish certain data collection tasks for evaluation purposes. Specifically, our unit must provide, prior to September 30, 1988, "the number, ethnicity, gender, disability and age of individuals referred, identified, and receiving services as learning disabled during the 1987-88 fiscal year." This data will be collected on learning disabled students served each year until 1991. We request that you supply this information on students assessed from July 1, 1987 through June 30, 1988, to the Chancellor's Office by July 15, 1988.

We realize the short notice of this request, but we have no choice but to respond to the directive from the Legislature. As it is, we are requesting this information in advance of the actual passage of the Budget Act, and thus giving you some additional notice. It is IMPERATIVE that we have this information from ALL colleges so that when the California Postsecondary Education Commission (CPEC) reviews the data to report to the Legislature it will be comprehensive. If this request presents a problem or you have any questions, contact Lynn Frady of this office immediately at (916) 323-5957.

A Data Collection Form, designed for this specific request has been sent to the Learning Disability and/or College Specialist to complete. Please copy the form as necessary, and return by July 15th to the Chancellor's Office, attention: Karen Halliday.

Thank you very much for your cooperation in this matter.

Enclosure

cc: College Specialist
Learning Disabilities Specialist
Robert Howard
DSP&S Staff

May 26, 1988

## Attention: College Specialist/LD Specialist

Please provide the requested information for all students who were assessed using the new LD Eligibility Model *beginning on July 1, 1987* and through June 30, 1988. Students already assessed and receiving services prior to July 1, 1987 will not be included in this data collection.

All student information can be obtained from your "INTAKE SCREENING AND ELIGIBILITY RECORD" (Blue/Gray Booklet). Use the following coding system when completing this form.

## * RACE

1 = American Indian or Alaskan Native
2 = Asian or Pacific Islander
3 = Filipino
4 = Black, Negro, or Afro-American
5 = Chicano, Hispanic, Mexican-American, or Spanish-Speaking American
6 = White or Caucasian
7 = Other
8 = Unknown, Missing

## ** Eligibility component coding system:

Y = Met the criteria for this component
PC = Professional certification used
N = Did not meet the criteria for this component
NA = Component was not administered

If a student has met the criteria for a component using professional certification, please circle both Y and PC for that component.

*** *Added Services = Those services provided beyond assessment.*

If you need assistances call (916) 323-5957

LD ELIGIBILITY MODEL DATA FORM

COLLEGE: _____ DATE: _____

_____

Signature & Title of person Completing the form.

Eligibility Components ** (Please circle the appropriate code.)

| Student ID Number | Sex | Age Yrs | * Race | Intake S. | M. Ach | A. Beh. | Ability Lev | Proc. D. | Apt-Ach | Elig. Rec. | *** Added Serv. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |
| | | | | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y PC N NA | Y N |

## Appendix C

## Elaborated Results Section

Overview

In this expanded version of the Results section, additional data and statistical outcomes are presented. These additional information provide a broader perspective of the material in the Results section. The data are presented in frequency tables and cross-classification tables. Both types of tables are included in presenting age, gender, and racial factors and the relationship of each to the eligibility outcomes.

Age factor

Referral sample. Of the 8283 students in the referral sample, 8267 (99.8%) reported age information. A frequency listing of the specific ages are included in Tables 6 and 7. The distinguishing feature between these two tables is that Table 6 includes the missing data while in Table 7 cases have been removed which were missing information on age. The age frequencies and associated percentages have been adjusted to reflect the removal of the missing cases.

These tables and other frequency listings like them have a common format in this report. The left column includes the frequency count. The second column is a cumulative frequency count. The third column is the relative percentage. The fourth column is the cumulative percentage, and the last column on the right is the listing of the specific levels of the variable. In Table 6 for example, the particular levels of the variable age are the specific years of age of the students.

Table 6
Frequency values for Age

| Count | Cum Count | Pct | Cum Pct | Age |
|---|---|---|---|---|
| 16 | 16 | .2 | .2 | Missing |
| 24 | 40 | .3 | .5 | 16 |
| 160 | 200 | 1.9 | 2.4 | 17 |
| 816 | 1016 | 9.9 | 12.3 | 18 |
| 941 | 1957 | 11.4 | 23.6 | 19 |
| 623 | 2580 | 7.5 | 31.1 | 20 |
| 459 | 3039 | 5.5 | 36.7 | 21 |
| 370 | 3409 | 4.5 | 41.2 | 22 |
| 354 | 3763 | 4.3 | 45.4 | 23 |
| 317 | 4080 | 3.8 | 49.3 | 24 |
| 271 | 4351 | 3.3 | 52.5 | 25 |
| 265 | 4616 | 3.2 | 55.7 | 26 |
| 273 | 4889 | 3.3 | 59.0 | 27 |
| 242 | 5131 | 2.9 | 61.9 | 28 |
| 235 | 5366 | 2.8 | 64.8 | 29 |
| 227 | 5593 | 2.7 | 67.5 | 30 |
| 211 | 5804 | 2.5 | 70.1 | 31 |
| 215 | 6019 | 2.6 | 72.7 | 32 |
| 171 | 6196 | 2.1 | 74.8 | 33 |
| 180 | 6376 | 2.2 | 77.0 | 34 |
| 184 | 6560 | 2.2 | 79.2 | 35 |
| 146 | 6706 | 1.8 | 81.0 | 36 |
| 156 | 6862 | 1.9 | 82.8 | 37 |
| 130 | 6992 | 1.6 | 84.4 | 38 |
| 114 | 7106 | 1.4 | 85.8 | 39 |
| 143 | 7249 | 1.7 | 87.5 | 40 |
| 110 | 7359 | 1.3 | 88.8 | 41 |
| 89 | 7448 | 1.1 | 89.9 | 42 |
| 94 | 7542 | 1.1 | 91.1 | 43 |
| 108 | 7650 | 1.3 | 92.4 | 44 |
| 78 | 7728 | .9 | 93.3 | 45 |
| 72 | 7800 | .9 | 94.2 | 46 |
| 78 | 7878 | .9 | 95.1 | 47 |
| 64 | 7942 | .8 | 95.9 | 48 |
| 46 | 7988 | .6 | 96.4 | 49 |
| 51 | 8039 | .6 | 97.1 | 50 |
| 36 | 8075 | .4 | 97.5 | 51 |
| 31 | 8106 | .4 | 97.9 | 52 |
| 28 | 8134 | .3 | 98.2 | 53 |
| 20 | 8154 | .2 | 98.4 | 54 |
| 17 | 8171 | .2 | 98.6 | 55 |
| 23 | 8194 | .3 | 98.9 | 56 |
| 15 | 8209 | .2 | 99.1 | 57 |
| 15 | 8224 | .2 | 99.3 | 58 |
| 11 | 8235 | .1 | 99.4 | 59 |
| 3 | 8238 | 0.0 | 99.5 | 60 |
| 6 | 8244 | .1 | 99.5 | 61 |
| 6 | 8250 | .1 | 99.6 | 62 |
| 5 | 8255 | .1 | 99.7 | 63 |
| 5 | 8260 | .1 | 99.7 | 64 |
| 8 | 8268 | .1 | 99.8 | 65 |
| 5 | 8273 | .1 | 99.9 | 66 |
| 3 | 8276 | 0.0 | 99.9 | 67 |
| 1 | 8277 | 0.0 | 99.9 | 68 |
| 2 | 8279 | 0.0 | 100.0 | 70 |
| 2 | 8281 | 0.0 | 100.0 | 71 |
| 1 | 8282 | 0.0 | 100.0 | 73 |
| 1 | 8283 | 0.0 | 100.0 | 77 |

Table 7
Frequency values for Age, Missing removed

| Count | Cum Count | Pct | Cum Pct | Age |
|---|---|---|---|---|
| 24 | 24 | .3 | .3 | 16 |
| 160 | 184 | 1.9 | 2.2 | 17 |
| 816 | 1000 | 9.9 | 12.1 | 18 |
| 941 | 1941 | 11.4 | 23.5 | 19 |
| 623 | 2564 | 7.5 | 31.0 | 20 |
| 459 | 3023 | 5.6 | 36.6 | 21 |
| 370 | 3393 | 4.5 | 41.0 | 22 |
| 354 | 3747 | 4.3 | 45.3 | 23 |
| 317 | 4064 | 3.8 | 49.2 | 24 |
| 271 | 4335 | 3.3 | 52.4 | 25 |
| 265 | 4600 | 3.2 | 55.6 | 26 |
| 273 | 4873 | 3.3 | 58.9 | 27 |
| 242 | 5115 | 2.9 | 61.9 | 28 |
| 235 | 5350 | 2.8 | 64.7 | 29 |
| 227 | 5577 | 2.7 | 67.5 | 30 |
| 211 | 5788 | 2.6 | 70.0 | 31 |
| 215 | 6003 | 2.6 | 72.6 | 32 |
| 177 | 6180 | 2.1 | 74.8 | 33 |
| 180 | 6360 | 2.2 | 76.9 | 34 |
| 184 | 6544 | 2.2 | 79.2 | 35 |
| 146 | 6690 | 1.8 | 80.9 | 36 |
| 156 | 6846 | 1.9 | 82.8 | 37 |
| 130 | 6976 | 1.6 | 84.4 | 38 |
| 114 | 7090 | 1.4 | 85.8 | 39 |
| 143 | 7233 | 1.7 | 87.5 | 40 |
| 110 | 7343 | 1.3 | 88.8 | 41 |
| 89 | 7432 | 1.1 | 89.9 | 42 |
| 94 | 7526 | 1.1 | 91.0 | 43 |
| 108 | 7634 | 1.3 | 92.3 | 44 |
| 78 | 7712 | .9 | 93.3 | 45 |
| 72 | 7784 | .9 | 94.2 | 46 |
| 78 | 7862 | .9 | 95.1 | 47 |
| 64 | 7926 | .8 | 95.9 | 48 |
| 46 | 7972 | .6 | 96.4 | 49 |
| 51 | 8023 | .6 | 97.0 | 50 |
| 36 | 8059 | .4 | 97.5 | 51 |
| 31 | 8090 | .4 | 97.9 | 52 |
| 28 | 8118 | .3 | 98.2 | 53 |
| 20 | 8138 | .2 | 98.4 | 54 |
| 17 | 8155 | .2 | 98.6 | 55 |
| 23 | 8178 | .3 | 98.9 | 56 |
| 15 | 8193 | .2 | 99.1 | 57 |
| 15 | 8208 | .2 | 99.3 | 58 |
| 11 | 8219 | .1 | 99.4 | 59 |
| 3 | 8222 | 0.0 | 99.5 | 60 |
| 6 | 8228 | .1 | 99.5 | 61 |
| 6 | 8234 | .1 | 99.6 | 62 |
| 5 | 8239 | .1 | 99.7 | 63 |
| 5 | 8244 | .1 | 99.7 | 64 |
| 8 | 8252 | .1 | 99.8 | 65 |
| 5 | 8257 | .1 | 99.9 | 66 |
| 3 | 8260 | 0.0 | 99.9 | 67 |
| 1 | 8261 | 0.0 | 99.9 | 68 |
| 2 | 8263 | 0.0 | 100.0 | 70 |
| 2 | 8265 | 0.0 | 100.0 | 71 |
| 1 | 8266 | 0.0 | 100.0 | 73 |
| 1 | 8267 | 0.0 | 100.0 | 77 |

Tables 8 and 9 have been included to indicate the frequency counts of students when ages were collapsed into the seven categorical groupings. These groupings are commonly used in Chancellor's Office reports. Table 9 reflects the changes in percentages when the missing cases have been removed. Of the 8267 students with age information, a little more than two percent, 2.2%, (n = 184) were in the 16 or 17 year old age grouping, 9.9% (n = 816) in the 18 year old grouping, 11.4% (n = 941) in the 19 year old grouping, 25.7% (n = 2123) in the 20 - 24 year old grouping, 15.6% (n = 1286) in

the 25 - 29 year old grouping, 31.7% (n = 2622) in the 30 - 49 year old grouping, and 3.6% (n = 295) in the 50 or over year old grouping.

Table 8
Frequency values for Age group

| Count | Cum Count | Pct | Cum Pct | Age Group |
|---|---|---|---|---|
| 184 | 184 | 2.2 | 2.2 | 16 or 17 |
| 816 | 1000 | 9.9 | 12.1 | 18 |
| 941 | 1941 | 11.4 | 23.4 | 19 |
| 2123 | 4064 | 25.6 | 49.1 | 20-24 |
| 1286 | 5350 | 15.5 | 64.6 | 25-29 |
| 2622 | 7972 | 31.7 | 96.2 | 30-49 |
| 295 | 8267 | 3.6 | 99.8 | 50 or over |
| 16 | 8283 | .2 | 100.0 | Missing |

Table 9
Frequency values for Age group, Missing removed

| Count | Cum Count | Pct | Cum Pct | Age Group |
|---|---|---|---|---|
| 184 | 184 | 2.2 | 2.2 | 16 or 17 |
| 816 | 1000 | 9.9 | 12.1 | 18 |
| 941 | 1941 | 11.4 | 23.5 | 19 |
| 2123 | 4064 | 25.7 | 49.2 | 20-24 |
| 1286 | 5350 | 15.6 | 64.7 | 25-29 |
| 2622 | 7972 | 31.7 | 96.4 | 30-49 |
| 295 | 8267 | 3.6 | 100.0 | 50 or over |

The percentage values and numbers for the system-wide college enrollment in fall, 1987 were also determined and are included in Table 10. The respective percentages for the seven age groupings were: 2.5, 7.8, 8.2, 24.4, 15.5, 30.4, and 11.2. The greatest discrepancy between the percentages of the college enrollment and the referral groups occurred in the 50 or over age grouping. The system-wide college enrollment figures total 1,264,409. This count includes all students enrolled: full-time, part-time, day time, evening, credit and non-credit. Age was unknown for 9,023 students (<.1%).

Table 10
Referral Sample and College Enrollment Age Groupings

| Age Group | N % | 16 or 17 | 18 | 19 | 20 - 24 | 25 - 29 | 30 - 49 | 50 or over | Total |
|---|---|---|---|---|---|---|---|---|---|
| Referral Sample | N | 184 | 816 | 941 | 2123 | 1286 | 2622 | 295 | 8267 |
| | % | 2.2 | 9.9 | 11.4 | 25.7 | 15.6 | 31.7 | 3.6 | 100 |
| Total College | N | 31610 | 98624 | 103682 | 308515 | 19598 | 384380 | 141614 | 1264409 |
| | % | 2.5 | 7.8 | 8.2 | 24.4 | 15.5 | 30.4 | 11.2 | 100 |

Identified sample. Age and identification information was available on 8267 students. Of these students, 768 were not administered the Eligibility Component, which is the last component in the identification procedures. Table 10 includes a cross-classification of age groupings and the outcome on the Eligibility Component. The table includes the seven age groupings and the outcomes, either eligible or ineligible, of the LD identification procedures.

To acquaint the reader with these tables some of the cells in Table 11 are presented in bold type. These values in bold type are described specifically. The farthest right hand column, labeled "Row Total," includes two numerical values, a whole number and a percentage. These values represent the totals for the given row and the percentage of that row given the total sample. For example, the right hand cell at the end of the row labeled "Eligible" includes the values 5310 and 70.81. These values indicate that 5310 students or 70.81% of all students with age and Eligibility Component information were eligible. The totals are located in the bottom row, labeled "Column Total," at the extreme right. In this table the total number of cases was 7499. The bottom row also includes two values, a count and a percentage. These values represent the totals for that column and percentage of that column given the total sample. For example, the bottom left hand cell contains the values 158 and 2.11. These values indicate that 158 or 2.11% of the 7499 students were in the "16 or 17" age grouping.

Table 11
Cross-classification of Eligibility Outcome by Age

| Row Percent / Column Percent | | 16 or 17 | 18 | 19 | 20-24 | 25-29 | 30-49 | 50 or over | Total |
|---|---|---|---|---|---|---|---|---|---|
| Eligible | R | **2.24** | 9.79 | 11.51 | 25.67 | 15.46 | 31.56 | 3.77 | **5310** |
| | C | **75.32** | 71.53 | 72.22 | 71.62 | 69.52 | 69.31 | 75.19 | **70.81** |
| Ineligible | R | 1.78 | 9.46 | 10.74 | 24.67 | 16.45 | 33.90 | 3.02 | 2189 |
| | C | 24.68 | 28.47 | 27.78 | 28.38 | 30.48 | 30.69 | 24.81 | 29.19 |
| Column Total | | **158** | 727 | 846 | 1903 | 1181 | 2418 | 266 | 7499 |
| | | **2.11** | 9.69 | 11.28 | 25.38 | 15.75 | 32.24 | 3.55 | 100.00 |

Beside these row and column totals are the specific age x eligibility outcome cells. Within each cell of the table are two numerical values. The top value is the row (R) percentage and the bottom value is the column (C) percentage. The row percentage indicates the percentage of the students in that row who were in the particular column heading. For example, in the row titled "Eligible," the value 2.24 is in top, left cell. This value indicates that of all the eligible students (of which the number was 5310 or 70.81%), 2.24% were 16 or 17 years of age.

The column percentage indicates the percentage of the students in that column who were in the particular row. For example, in the column titled "16 or 17," the value in the top, left cell is 75.32. This indicates that of all "16 or 17" year old students (of which the number was 158 or 2.11% of the total number), 75.32% were eligible.

One comparison is row percentage of a given cell, 2.24, with the row percentage in the row labeled Column Total, 2.11%. If one assumes that a parity model is appropriate, one would expect that these two cells should be comparable. That is, within a column the

row percentage for the eligible students of a particular age should be similar to the row percentage reflected in the Column Total row.

One might question whether the proportions among age groups who were not administered the Eligibility Component vary. Table 12 includes that information in the third row. Students were not administered this component if they failed to return and complete other components in the eligibility model.

The values in Table 12 follow a similar format. However, additional information is also provided. In Table 12 an additional row has been included. This row, labeled "Not administered," is a tabulation of the row and column percentages of those students who for one reason or another did not complete the eligibility process even though they started. As a consequence, no determination was made about whether they were eligible for the learning disabilities program. In general, 9.29% of the students who initiated the eligibility process did not complete the procedures. These data suggest that the younger the student, the less likely s/he was to complete the procedures.

Table 12
Cross-classification of Eligibility Outcome by Age

| Row Percent / Column Percent | | 16 or 17 | 18 | 19 | 20-24 | 25-29 | 30-49 | 50 or over | Row Total |
|---|---|---|---|---|---|---|---|---|---|
| Eligible | R | 2.24 | 9.79 | 11.51 | 25.67 | 15.46 | 31.56 | 3.77 | 5310 |
| | C | 64.67 | 63.73 | 64.93 | 64.20 | 63.84 | 63.92 | 67.80 | 64.23 |
| Ineligible | R | 1.78 | 9.46 | 10.74 | 24.67 | 16.45 | 33.90 | 3.02 | 2189 |
| | C | 21.20 | 25.37 | 24.97 | 25.44 | 27.99 | 28.30 | 22.37 | 26.48 |
| Not Administered | R | 3.39 | 11.59 | 12.37 | 28.65 | 13.67 | 26.56 | 3.78 | 768 |
| | C | 14.13 | 10.91 | 10.10 | 10.36 | 8.16 | 7.78 | 9.83 | 9.29 |
| Column Total | | 184 | 816 | 941 | 2123 | 1286 | 2622 | 295 | 8267 |
| | | 2.23 | 9.87 | 11.38 | 25.68 | 15.56 | 31.72 | 3.57 | 100.00 |

Analysis. An eyeball review of the tabled values suggests that the percentages of those eligible in each age grouping are similar to the percentages of each group in the total sample. For example, of the total number of eligible students indicated in the top row of Table 11, 2.24% of are in the "16 or 17" age grouping. Of the total sample, 2.11% were in the "16 or 17" age grouping. Thus, these two percentages differed by .13%; an additional .13% of this age group were judged eligible over their percentage in the total sample. One might question whether such a departure from expected values is important.

Three statistics were calculated to evaluate such differences both in this table and in similar subsequent comparisons: a) chi-square test of independence, $X^2$, and b) Cramer's coefficient, $v'$ and c) effect size, $\omega$. An appropriate question from the reader might be: What value is there in three different statistics to examine the relationship among the values in a particular table? One answer is that the tabled data provide a variety of information, none of which is adequately addressed by any one or even any three statistics to everyone's satisfaction. Other statistics might also be used depending on one's interests.

One chosen statistical index was the chi-square ($X^2$) test of association. Chi-square is a frequently used index to indicate the statistical association or independence of two or more attributes or variables. Because chi-square is used so frequently, it is included here. However, given the large sample sizes in this study, chi-square is not a particularly useful index. Indeed, this statistic is very powerful in detecting any departure from expected values or any degree of statistical relationships, even those relationships which have limited meaning. Hays (1973) stated a common belief that nothing on earth is completely independent of anything else and that given a large enough sample size, the chances are very good that the evaluator can demonstrate the association of any two qualitative attributes via a chi-square test. Whether the association is meaningful is a separate question. In addition, since chi-square is an overall test or global test, if the observed values in any two cells depart from the expected values, the test will yield statistically significant results. Thus, in one situation most of the observed and expected values may be comparable, but because two of the values differ, the test may yield significant results. In a second situation, the differences among expected and observed values may be small, however the cumulative effect may result in a statistically significant finding. The chi-square test does not indicate which specific cells are comparable or differ from expected values.

To test the calculated chi-square an alpha level of .05 was set to indicate statistical significance. If the computed statistical value had a probability less than or equal to .05, the difference would be considered a reliable difference. That is, the difference between the expected and observed values did not occur by chance, but rather reflected stable differences. This statistic evaluates the extent of statistical independence between the age groups and the eligibility outcome, either eligible or ineligible. In this test of the data in Table 11, the chi-square was not judged significant ($X^2 = 9.20$, $df = 6$, $p = .163$) since the computed $p$ -value was greater than .05.
Another index assesses the degree or magnitude of statistical association between two variables. This correlational index is called Cramer's coefficient, $v'$ Cramer's coefficient is useful for describing the degree of association between variables such as those variables used in these analyses. The upper limit on $v'$ is 1.00, meaning a complete dependence between the two variables. The lower limit is .00, meaning no relationship. In the Table 11 data, the calculated value of $v'$ was only .035 indicating a negligible correlation between the two variables.

The third index, effect size, provides a means of assessing the amount of variance in the eligibility outcome which is explained by an independent variable. In this study the independent variables were age, gender, and race. Eligibility outcome was considered the dependent variable. Effect size represents a numerical index of the relationship between the two variables; that is, the effect that the independent variable has on the dependent variable. The effect size value theoretically ranges from zero to 1.00. The closer the value is to 1.00, the greater the effect that the independent variable has on the eligibility outcome, the likelihood being identified or not identified as learning disabled. If the effect size is large, such as .50 or larger, the independent variable is considered to have a significant influence on the dependent variable. Effect sizes of .10 or less are considered small and values of .25 are considered medium. As in the chi-square test, effect size is also an overall index of the relationship between the two variables. Quite likely, the relationship between particular levels or groupings of a variable have a greater or lesser effect. Effect size, $\omega$, is computed using the contingency coefficient, $C$, with the following formula found in Cohen (1977):

$$\omega = ( C^2 / 1 - C^2 )^{1/2}$$

The calculated effect size for Table 2 was .035. This value indicates that 3.5% of all the factors which contributed to the outcome on the eligibility component was due to age. Or in other words, one's eligibility outcome depended more on other factors than on age. At present, those other factors are unknown.

in other words, one's eligibility outcome depended more on other factors than on age. At present, those other factors are unknown.

Age related issues. The age pattern of referred students showed a similar pattern to the general college enrollment data. This pattern may not have been expected for several reasons. Since the majority of LD programs are day programs and do not operate in the evening, a sizable portion of the college population does not have opportunities to participate and thus were not likely reflected in the referred sample. In addition, the referred sample in the "50 or over" age grouping was smaller than the general population's proportion in this age grouping. Several factors may account for this disproportion: enrollment patterns, day or evening classes, counseling, course selections, career interests, and perceived value.

Gender factor

Referral sample. Gender information was available on all 8283 students in the referral sample. Of those 4346 or 52.5% were females and 3937 or 47.5% were males.

Table 13
Frequency values for Gender

| Count | Cum Count | Pct | Gender |
|---|---|---|---|
| 4346 | 4346 | 52.5 | Female |
| 3937 | 8283 | 47.5 | Male |

These proportions in the referral sample can be contrasted with the 1987 system-wide enrollment distribution. In the fall of 1987, females numbered 716,920 or 56.7% and males numbered 547,489 or 43.3%. Less than .2% of the students did not indicate gender. The proportions differed between the two distributions, but females were still more likely to be referred than males, though not in as great a margin.

Identified sample. Gender and identification information was available on 8283 students. Of these students, 782 (9.44%) were not administered the Eligibility Component. Table 14 includes a cross-classification of gender groups and included those proportions of males and females not administered the Eligibility Component. Table 15 includes comparable data, but shows the adjustment in proportions when those students who were not administered the Eligibility Component were excluded.

Table 14
Cross-classification of Eligibility Outcome by Gender

| Row Percent / Column Percent | | Female | Male | Row Total |
|---|---|---|---|---|
| Eligible | R | 50.55 | 49.45 | 5312 |
| | C | 61.78 | 66.73 | 64.13 |
| Ineligible | R | 58.79 | 41.21 | 2189 |
| | C | 29.61 | 22.91 | 26.43 |
| Not Administered | R | 47.83 | 52.17 | 782 |
| | C | 8.61 | 10.36 | 9.44 |
| Column Total | | 4346 | 3937 | 8283 |
| | | 52.47 | 47.53 | 100.00 |

Table 15
Cross-classification of Eligibility Outcome by Gender

| Row Percent / Column Percent | | Female | Male | Row Total |
|---|---|---|---|---|
| Eligible | R | 50.55 | 49.45 | 5312 |
| | C | 67.60 | 74.44 | 70.82 |
| Ineligible | R | 58.79 | 41.21 | 2189 |
| | C | 32.40 | 25.56 | 29.18 |
| Column Total | | 3972 | 3529 | 7501 |
| | | 52.95 | 47.05 | 100.00 |

Analysis. The proportions of the referral sample differ somewhat from the general college population. The referral sample of females was 4% less than their proportion in the college. Similarly, the proportion of males was greater in the referral sample by 4%.

In the identified LD sample with the values tabled in Table 15, the calculated chi-square indicated that these differences were statistically significant, i.e., the difference between expected and observed proportions of males and females eligible on the component was greater than would occur by chance ($X^2 = 42.001$, $df = 1$, $p = 0.00$). More of the ineligible students were female than were expected. (Since this table was a 2 X 2 table, Yates' correction was applied in calculating chi-square.)

A follow-up question is: What is the degree of association between the students' gender and outcome? This question is answered with the phi correlation coefficient, which in this case is .075 and is a low correlation. (Since Table 15 is a 2 X 2 table, phi is used instead of Cramer's v.) If one asks to what extent does gender influence the outcome on the Eligibility Component, the calculated value is .075. This value is commonly

considered a small effect, and provides little information for predicting the eligibility outcome.

The ratio of females to males identified as learning disabled is quite different from the general pattern. In these data, the pattern was nearly 1:1. In previous analyses, largely from K - 12 grade levels, the ratio of males to females ranges from 3:2 to as high as 7:3. The differences in the community colleges is a shift in numerical values when one considers these other data sets.

Racial factor

Referral sample. Of the 8283 students in the referral sample, 7899 students indicated their racial group membership; information was missing on 384 cases. In addition 105 students, 1.3%, indicated that their racial group was not included in the six categories and chose "Other." A frequency count for each racial grouping in the referral sample and the system-wide college enrollment appears in Table 16. As with the other factors, a frequency table, Table 17, is provided which excludes the Missing and Other cases and shows the adjusted percentages for the referral sample.

Table 16
Frequency Values for Race

| Referral Sample | | 1987 College Enrollment | | |
|---|---|---|---|---|
| Count | Pct | Count | Pct | Race |
| 109 | 1.3 | 15173 | 1.2 | Am Indian |
| 175 | 2.1 | 122648 | 9.7 | Asian |
| 751 | 9.1 | 89773 | 7.1 | Black |
| 52 | .6 | 31610 | 2.5 | Filipino |
| 1205 | 14.5 | 189661 | 15.0 | Hispanic |
| 5502 | 66.4 | 788991 | 62.0 | White |
| 105 | 1.3 | 26553 | 2.1 | Other |
| 384 | 4.6 | 63610 | .6 | Missing |
| 8283 | | 1264409 | | Total |

Table 17
Frequency Values for Race, Missing and Other Removed

| Count | Cum Count | Pct | Cum Pct | Race |
|---|---|---|---|---|
| 109 | 109 | 1.4 | 1.4 | Am Indian |
| 175 | 284 | 2.2 | 3.6 | Asian |
| 751 | 1035 | 9.6 | 13.3 | Black |
| 52 | 1087 | .7 | 13.9 | Filipino |
| 1205 | 2292 | 15.5 | 29.4 | Hispanic |
| 5502 | 7794 | 70.6 | 100.0 | White |

Identified sample. The association of race and the eligibility outcome was also evaluated. Race and eligibility outcome information was available on 7794 students. Of this group, 686 (8.8%) students were not administered the Eligibility Component. These data are included in Table 18.

Table 16
Frequency Values for Race

| Referral Sample | | 1987 College Enrollment | | |
|---|---|---|---|---|
| Count | Pct | Count | Pct | Race |
| 109 | 1.3 | 15173 | 1.2 | Am Indian |
| 175 | 2.1 | 122648 | 9.7 | Asian |
| 751 | 9.1 | 89773 | 7.1 | Black |
| 52 | .6 | 31610 | 2.5 | Filipino |
| 1205 | 14.5 | 189661 | 15.0 | Hispanic |
| 5502 | 66.4 | 788991 | 62.0 | White |
| 105 | 1.3 | 26553 | 2.1 | Other |
| 384 | 4.6 | 63610 | .6 | Missing |
| 8283 | | 1264409 | | Total |

Table 17
Frequency Values for Race, Missing and Other Removed

| Count | Cum Count | Pct | Cum Pct | Race |
|---|---|---|---|---|
| 109 | 109 | 1.4 | 1.4 | Am Indian |
| 175 | 284 | 2.2 | 3.6 | Asian |
| 751 | 1035 | 9.6 | 13.3 | Black |
| 52 | 1087 | .7 | 13.9 | Filipino |
| 1205 | 2292 | 15.5 | 29.4 | Hispanic |
| 5502 | 7794 | 70.6 | 100.0 | White |

Identified sample. The association of race and the eligibility outcome was also evaluated. Race and eligibility outcome information was available on 7794 students. Of this group, 686 (8.8%) students were not administered the Eligibility Component. These data are included in Table 18.

Table 18
Cross-classification of Eligibility Outcome by Race

| Row Pct / Column Pct | | American Indian | Asian | Black | Fili | Hispan | White | Row Total |
|---|---|---|---|---|---|---|---|---|
| Eligible | R | 1.29 | 1.79 | 8.28 | .50 | 14.25 | 73.90 | 5038 |
| | C | 59.63 | 51.43 | 55.53 | 48.08 | 59.59 | 67.67 | 64.64 |
| Ineligible | R | 1.26 | 3.19 | 12.17 | 1.11 | 17.44 | 64.83 | 2070 |
| | C | 23.85 | 37.71 | 33.56 | 44.23 | 29.96 | 24.39 | 26.56 |
| Not Administ. | R | 2.62 | 2.77 | 11.95 | .58 | 18.37 | 63.70 | 686 |
| | C | 16.51 | 10.86 | 10.92 | 7.69 | 10.46 | 7.94 | 8.80 |
| Column Total | | 109 | 175 | 751 | 52 | 1205 | 5502 | 7794 |
| | | 1.40 | 2.25 | 9.64 | .67 | 15.46 | 70.59 | 100.00 |

Table 19 includes the eligibility outcome for the six racial groupings. In analyzing these data, students who had indicated "Other" were eliminated. The rationale was that this group lacked sufficient specificity for knowing how to interpret the data.

Table 19
Cross-classification of Eligibility Outcome by Race

| Row Pct / Column Pct | | American Indian | Asian | Black | Fili | Hispanic | White | Row Total |
|---|---|---|---|---|---|---|---|---|
| Eligible | R | 1.29 | 1.79 | 8.28 | .50 | 14.25 | 73.90 | 5038 |
| | C | 71.43 | 57.69 | 62.33 | 52.08 | 66.54 | 73.50 | 70.88 |
| Ineligible | R | 1.26 | 3.19 | 12.17 | 1.11 | 17.44 | 64.83 | 2070 |
| | C | 28.57 | 42.31 | 37.67 | 47.92 | 33.46 | 26.50 | 29.12 |
| Column Total | | 91 | 156 | 669 | 48 | 1079 | 5065 | 7108 |
| | | 1.28 | 2.19 | 9.41 | .68 | 15.18 | 71.26 | 100.00 |

Analysis. A review of Table 16 indicates a marked difference in the representation of the Asians and Filipinos in the referral sample versus their representation in the general community college population. While the specific factors accounting for this discrepancy are unknown, one might speculate on a number of reasons for such a difference, e.g., overall achievement level, enrollment patterns, college goals, attributions of successful and unsuccessful achievement, scheduling patterns, motivation, counseling and advisement.

In Table 19, differences are also observed between the proportions of the racial groups in the sample and their eligibility outcome. These differences are reflected in the row percentages. The greatest difference was between the percentage of Whites in the sample, 71.26%, and their percentage of the identified students, 73.9%. This difference was 2.64%. Of minority groups, Blacks were under-represented in the eligible group by 1.13% (9.41 - 8.28 = 1.13) in comparison to their percentage in the referral sample.

The column percentages in Table 19 also show variations. While 52% of all Filipinos were eligible, 73.5% of all Whites were eligible. These two groups represent the greatest extremes. Interestingly, the Asians had the second lowest eligibility rate, 57.69%. These differences might be explained by language differences. That is, the colleges may be using the LD programs as a means of obtaining a more comprehensive assessment of the language and academic related characteristics of Asian and Filipino students. Thus, the referral may not be based on the likelihood of a learning disability, but rather on the need for additional academic and ESL programing information. On the other hand, these groups had lower proportions in the referral sample than their proportion in the general population. Clarification of these data await additional research.

The chi-square test for association was calculated on the expected and observed proportions in Table 19. The chi-square value was statistically significant and indicated that the observed proportions did differ from expected values ($X^2$ =71.79, *df* = 5, *p* = 0.00).

Cramer's correlational statistic assessed the relationship between racial grouping and eligibility outcome. The calculated value was .10, which is a low correlation.

If one asks to what extent did race influence the outcome on the Eligibility Component, the calculated value of the effect size was .10. Of the three factors considered, age, gender, and race, this last factor, race, had the greatest association and impact on the eligibility outcome. However, this value is small, i.e., even with race included, the other 90% of factors were not identified. Seemingly, other factors, perhaps more specific than race, would be important. These other factors might include socio-economic level, language facility, at-risk developmental indicators, health history, motivation, parental expectations, level of aspiration, interactions between age level and gender, the referral process, and the age, gender, and race of administrative and instructional staff. A growing body of research literature supports the view that factors other than race are implicated in explaining achievement levels.

Role of professional certification in eligibility outcomes

The learning disabilities eligibility model includes a variety of assessment procedures for use in evaluating each student's performance. The procedures vary depending upon which component of the eligibility model is assessed. Common to the components is the professional certification procedure. The professional certification procedure is used when the other procedures for a component are judged invalid. An important datum is the extent to which the professional certification procedure was used among eligible students and whether the use differed among racial groups. If differences among racial groups were evidenced, the data might indicate that LD specialists were planning and assessing students based on individual specific information. That is, that LD specialists were judging which procedures were individually appropriate.

Among those 5312 students who were identified as learning disabled, the professional certification procedure was used in 439 (8.3%) cases. This frequency was determined by sorting the data into two groups, those identified and not identified as LD. The identified students were then sorted again, those for whom professional certification was used on at least one component and those for whom professional certification was not used. Thus, professional certification was used with 439 of the identified LD students.

Table 20 includes the proportions for each racial grouping and whether professional certification was used in identifying the student as learning disabled. This table was based on information of each student's race, eligibility outcome, and use of professional certification. Students missing any of this information are not included in Table 20.

Table 20
Cross-classification of Professional Certification Use by Race

| Row Pct / Column Pct | | American Indian | Asian | Black | Fili | Hispanic | White | Row Total |
|---|---|---|---|---|---|---|---|---|
| No | R | 1.28 | 1.58 | 7.92 | .41 | 14.20 | 74.61 | 4620 |
| | C | 90.77 | 81.11 | 87.77 | 76.00 | 91.36 | 92.59 | 91.70 |
| Yes | R | 1.44 | 4.07 | 12.20 | 1.44 | 14.83 | 66.03 | 418 |
| | C | 9.23 | 18.89 | 12.23 | 24.00 | 8.64 | 7.41 | 8.30 |
| Column Total | | 65 | 90 | 417 | 25 | 718 | 3723 | 5038 |
| | | 1.29 | 1.79 | 8.28 | .50 | 14.25 | 73.90 | 100.00 |

Analysis. A review of Table 20 indicates a departure from the expected values for two groups: Asians and Filipinos. Of those for whom professional certification was used, their row percentages were higher than their proportions in the sample. Conversely, whites had a lower proportion than their representation in the sample. The column percentages also included fluctuations in the proportions. For almost 19 percent of the Asians and 24 percent of the Filipinos, professional certification procedures were used. In contrast, professional certification was used with only seven percent of the Whites.

The chi-square test for independence was statistically significant ( $X^2 = 33.854$, $df = 5$, $p = 0.00$). The variations in proportions were not due chance and reflect stable differences. The correlation between the two variables was small, .082 and similarly the effect size was small, .081. Thus, while real differences exist, overall race had little effect. Within specific racial groups such as Asians and Filipinos, the use of professional certification deserves closer examination. For those groups, LD specialists are making differential decisions and using the feature included in the eligibility model.

Summary

The material in this appendix was prepared to provide a fuller review of the data than what was presented in the Results section. The data here included a fuller description of the statistics and data set of referred and identified students.

The data were interpreted as indicating that overall age, gender, and racial factors had little relationship with the eligibility outcome. However, within those factors statistically significant results were determined. Future analyses may want to examine specific levels within each factor. For example, within the age factor the age group of "50 or over" or in the racial factor, the Asian group might be analyzed more fully using different statistical models. These statistics, e.g., log linear or Bayesian, might be helpful in understanding or predicting outcomes.

# CALIFORNIA POSTSECONDARY EDUCATION COMMISSION

The California Postsecondary Education Commission is a citizen board established in 1974 by the Legislature and Governor to coordinate the efforts of California's colleges and universities and to provide independent, non-partisan policy analysis and recommendations to the Governor and Legislature.

**Members of the Commission**

The Commission consists of 15 members. Nine represent the general public, with three each appointed for six-year terms by the Governor, the Senate Rules Committee, and the Speaker of the Assembly. The other six represent the major segments of postsecondary education in California.

As of January 1988, the Commissioners representing the general public are:
Mim Andelson, Los Angeles
C. Thomas Dean, Long Beach, Chairperson
Henry Der, San Francisco
Seymour M. Farber, M.D., San Francisco
Helen Z. Hansen, Long Beach
Lowell J. Paige, El Macero
Cruz Reynoso, Los Angeles, Vice Chairperson
Sharon N. Skog, Palo Alto
Stephen P. Teale, M.D., Modesto

Representatives of the segments are:

Yori Wada, San Francisco; representing the Regents of the University of California

Claudia H. Hampton, Los Angeles; representing the Trustees of the California State University

John F. Parkhurst, Folsom; representing the Board of Governors of the California Community Colleges

Harry Wugalter, Thousand Oaks; representing the Chairman of the Council for Private Postsecondary Educational Institutions

Kenneth L. Peters, Tarzana;representing the California State Board of Education

James B. Jamieson, San Luis Obisbo; representing California's independent colleges and universities

**Functions of the Commission**

The Commission is charged by the Legislature and Governor to "assure the effective utilization of public postsecondary education resources, thereby eliminating waste and unnecessary duplication, and to promote diversity, innovation, and responsiveness to student and societal needs."

To this end, the Commission conducts independent reviews of matters affecting the 2,600 institutions of postsecondary education in California, including Community Colleges, four-year colleges, universities, and professional and occupational schools.

As an advisory planning and coordinating body, the Commission does not administer or govern any institutions, nor does it approve, authorize, or accredit any of them. Instead, it cooperates with other state agencies and non-governmental groups that perform these functions, while operating as an independent board with its own staff and its own specific duties of evaluation, coordination, and planning.

**Operation of the Commission**

The Commission holds regular meetings throughout the year at which it debates and takes action on staff studies and takes positions on proposed legislation affecting education beyond the high school in California. By law, the Commission's meetings are open to the public. Requests to address the Commission may be made by writing the Commission in advance or by submitting a request prior to the start of a meeting.

The Commission's day-to-day work is carried out by its staff in Sacramento, under the guidance of its interim executive director, Kenneth B. O'Brien, who is appointed by the Commission.

The Commission publishes and distributes without charge some 40 to 50 reports each year on major issues confronting California postsecondary education. Recent reports are listed on the back cover.

Further information about the Commission, its meetings, its staff, and its publications may be obtained from the Commission offices at 1020 Twelfth Street, Third Floor, Sacramento, CA 98514; telephone (916) 445-7933.

# COMMENTS ON THE COMMUNITY COLLEGES' STUDY OF STUDENTS WITH LEARNING DISABILITIES

California Postsecondary Education Commission Report 89-5

One of a series of reports published by the Commission as part of its planning and coordinating responsibilities. Additional copies may be obtained without charge from the Publications Office, California Postsecondary Education Commission, Third Floor, 1020 Twelfth Street, Sacramento, California 95814-3985.

Recent reports of the Commission include:

88-32 A Comprehensive Student Information System, by John G. Harrison: A Report Prepared for the California Postsecondary Education Commission by the Wyndgate Group, Ltd. (September 1988)

88-33 Appropriations in the 1988-89 State Budget for the Public Segments of Higher Education: A Staff Report to the California Postsecondary Education Commission (September 1988)

88-34 Legislation Affecting Higher Education Enacted During the 1987-88 Session: A Staff Report to the California Postsecondary Education Commission (October 1988)

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88-38 Progess in Implementing the Recommendations of the Commission's 1987 Report on Strengthening Transfer and Articulation: A Staff Report to the California Postsecondary Education Commission (Oct 1988)

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88-40 The Fourth Segment: Accredited Independent Postsecondary Education in California. The Fifth in a Series of Reports on the Financial Condition of California's Regionally Accredited Independent Colleges and Universities (December 1988)

88-41 Beyond Assessment: Enhancing the Learning and Development of California's Changing Student Population. A Report in Response to the Higher Education Talent Development Act of 1987 (Assembly Bill 2016; Chapter 1296, Statutes of 1987) (December 1988)

88-42 The Role of the Commission in Achieving Educational Equity: A Declaration of Policy (December 1988)

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88-45 Prepaid College Tuition and Savings Bond Programs: A Staff Report to California Postsecondary Education Commission (December 1988)

89-1 Legislative Priorities for the Commission, 1989: A Report of California Postsecondary Education Commission (January 1989)

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89-3 Toward Educational Equity: Progress in Implementing the Goals of Assembly Concurrent Resolution 83 of 1984: A Report to the Legislature in Response to Assembly Bill 101 (Chapter 574, Statutes of 1987) (January 1989)

89-4 The Effectiveness of Mathematics, Engineering, and Science Achievement (MESA) Programs' Administrative and Policy-Making Processes: A Report to the Legislature in Response to Assembly Bill 610 (1985) (January 1989)

89-5 Comments on the Community Colleges' Study of Students with Learning Disabilities: A Report to the Legislature in Response to Supplemental Report Language to the 1988 State Budget Act (January 1989)

89-6 Prospects for Postsecondary Enrollment to 2005: Report of the Executive Director to California Postsecondary Education Commission, January 23, 1989 (January 1989)



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